

Mid-Hood Canal Chinook Recovery Strategy: 10-year Objectives and 3-year Plan

The goal is to maintain and recover locally adapted, natural-origin mid-Hood Canal Chinook sub-populations to self-sustaining levels that eventually would accommodate some level of targeted harvest. Consistent with the mid-Hood Canal Chinook Recovery Chapter, the 10-year recovery plan objectives are:

- 1) To initiate protection and restoration of stream and estuarine habitats that are the foundation for successful recovery of the Chinook.
- 2) To limit harvest so that it does not impede the recovery of mid-Hood Canal Chinook.
- 3) To reduce risk and speed recovery of the Chinook by using artificial production (fish culture) as a conservation tool.

The 3-year implementation plan calls for integrated habitat, harvest and hatchery recovery measures that extend ongoing efforts and initiate new actions prioritized by logical sequencing and effectiveness. Following are brief descriptions of the 3-year implementation approaches for habitat, harvest and hatchery.

Habitat: Habitat planning efforts in Hood Canal promote protection and restoration of ecosystem health as the key to Chinook recovery. Emphasis on restoration of natural habitat-forming processes, such as floodplain and estuarine connectivity, is common to all of the current planning activities and result in multi-species benefits. Hood Canal has a strong network of resource advocates working closely together to improve technical information and provide adaptive management for habitat planning and recovery actions as new information becomes available. The foundation for mid-Hood Canal Chinook salmon habitat recovery is based on the Lead Entity process managed by the Hood Canal Coordinating Council (HCCC.) The HCCC has been successful in engaging a group of cooperating partners, i.e. local, state, federal and tribal governments, business interests, environmental groups, salmon enhancement groups, and others. The 3-year implementation plan for habitat presented here is a product produced by the co-managers, building on previous lead entity work. The 3-year plan will soon be incorporated into the on-going lead entity process to generate projects and voluntary protective actions. The job of the lead entity will be to determine the prioritization of this list of actions through review of technical, social, and economic criteria, and determine appropriate paths forward to meet our longer-term implementation goals. Our Technical Advisory Group will be expanded to include TRT liaisons and SRFB review panel members, while our Citizen Advisory Group will be expanded to include additional citizen representatives that are endorsed by the HCCC Board.

Harvest: The co-managers (WDFW and Tribes) have prepared and are following a Puget Sound harvest management plan that is incorporated in the ESA 4(d) permit issued by the National Marine Fisheries Service in 2005. The mid Hood Canal recovery chapter's harvest management component has been adapted from this larger plan. The Puget Sound Technical Recovery Team has identified gaps in the harvest management component of the recovery chapter that need to be addressed. These include determining

a rebuilding exploitation rate to help guide harvest management planning and execution, accommodating spatial distribution and diversity in the harvest management strategy, and incorporating northern fisheries (e.g. Canadian) in limitations on harvest. Improved salmon population monitoring also is needed. Work on these tasks should proceed as soon as possible to strengthen harvest management protection of mid Hood Canal Chinook. Specific tasks have been identified for implementation over the next three years.

Hatchery: The hatchery program in the mid Hood Canal's Hamma Hamma River is intended to rebuild a locally adapted Chinook stock. The Puget Sound Technical Recovery Team, in its review of the mid Hood Canal hatchery management component, called for a better rationale of the Hamma Hamma strategy. This planning task would be addressed as part of the co-managers' proposed general management and operations support program. The Technical Recovery Team also recommended the hatchery strategy incorporate adaptive management. A key to effective adaptive management is monitoring and, in this regard, we have proposed a biological monitoring program to better understand the distribution and life histories of Chinook and other potentially interacting salmonid species in the mid Hood Canal watersheds and estuaries. This biological monitoring program would be implemented over the next three years to begin providing information as soon as possible in support of adaptive management.

Program Narratives:

Mid Hood Canal Chinook Recovery: Co-managers General Management and Operations Support Program

There is a need to provide oversight and ensure follow-up management and coordination of the Chinook recovery efforts. This program funds FTEs for WDFW and the Tribes to perform the following activities and tasks.

- Oversee hatchery and harvest recovery actions to ensure measures are executed as intended.
- Compile and assess monitoring data and assessments and assist in preparation of technical and administrative reports. Participate in follow-up coordination and planning meetings between co-managers and with other recovery participants (e.g., lead entities, local governments, non-government organizations, communities and citizens).
- Sponsor and/or participate in community education and public relations events.
- Negotiate management and funding agreements.
- Conduct research and analysis to address policy issues and participate in policy level meetings and negotiations.
- Participate in instream flow analyses and development of agreements.
- Work to complete a local adaptive management plan that provides for all H integration and includes region-wide coordination, and help manage implementation of the plan.
- Periodically participate in the reviewing and revision of the Chinook recovery plan. Participate in meetings and provide reports of recovery progress to regulatory agencies.
- Review and comment on processes relevant to and affecting Chinook recovery, including land use management through the State's Growth Management Act and Shoreline Management Act.

The ability of the co-managers to follow through with provisions of the Chinook recovery chapter depends upon their having the human resources to do so effectively. The above described program would provide the co-managers with these needed resources and, if implemented immediately as part of the three-year implementation plan, it would help avoid delays in carrying out actions specified in the plan and help complete the plan improvements suggested by the Puget Sound Technical Recovery Team.

Mid Hood Canal Population Analysis and Modeling to Support Harvest, Hatchery and Habitat Management and Planning

This program would address the population analysis and modeling needs identified in the mid Hood Canal Chinook recovery chapter (see Tables 6.2 and 7.2). Accomplishing the tasks under this program would help fill gaps identified by the TRT (see below) and would increase understanding and certainty in the management of mid Hood Canal

Chinook recovery. The program requires hiring an analyst proficient in population modeling and assessment to accomplish the following tasks:

- Chinook cohort analysis and run reconstruction of George Adams Hatchery stock. Coded wire tag data exist for this stock and since we currently lack such data for the mid Hood Canal Chinook, provides the best alternative for accomplishing the task.
- Use run reconstruction results to estimate Chinook exploitation rates over time and provide historical modeling input for preseason fisheries planning.
- Estimate a rebuilding exploitation rate (RER) as defined in the Co-managers Chinook Harvest Management Plan; this would be the exploitation rate that controls protective measures incorporated in annual fisheries planning and management.
- Update the mid Hood Canal Chinook EDT analysis and use it to reinforce and expand assessments of impacts on VSP parameters and effectiveness of recovery measures. Also, with respect to harvest management, EDT modeling would be used to make a short-term alternative estimate of RER and to analyze potential harvest effects on Chinook spatial distribution.
- Explore and incorporate use of newer models that bear on hatchery-related ecological interactions (the Competition, Predation, Disease (PCD) model developed on the Columbia River), and on integration of Hs (using upgraded version of EDT that provides for dynamic population simulation modeling, the AHA model, and Managing For Success (MFS)—a web site accessible all H database still being developed that includes links to planning and modeling tools.
- Help prepare for 2009 PST negotiations of a new Chinook annex to offer improved protection from non-southern U.S. harvest impacts.

This is a high priority program because it addresses immediate needs for population analysis and modeling to help reduce uncertainties and close gaps in the mid Hood Canal recovery plan that were identified by the Puget Sound Technical Recovery Team (TRT)*. The TRT cited the need to “[d]evelop quantitative estimates of a rebuilding exploitation rate...”. It indicated the need to “...expand the strategy to include effects of harvest on diversity and spatial distribution”. The TRT also recommended developing a strategy “...for managing both southern U.S. and northern fisheries to allow recovery ...” (incorporation of northern fisheries is best addressed through the PST Chinook annex). Furthermore, the TRT noted that documentation of assumptions used in the EDT model was poor and that no sensitivity analyses were provided. It suggested further development of “...life stage linkages relating ecological processes, land use, and habitat conditions to responses in population viability characteristics, and to potential responses in population viability”. Following up on the latter suggestion can be accomplished, at least in part, by use of EDT. The above described program either directly addresses or assists in addressing the TRT’s concerns. The program’s focus on immediate needs and scope calls for its implementation in the three-year time frame.

* Puget Sound TRT. 2005. Puget Sound Technical Recovery Team (TRT) Review Comments on May 2005 Salmon Recovery Plans. Manuscript Report. November 2005.

Mid Hood Canal Chinook Biological Monitoring Project

A biological monitoring project is proposed to augment the current biological monitoring of spawning escapements in the mid Hood Canal Chinook watersheds and the juvenile out-migrant trapping on the Hama Hama River. This project is intended to collect life history and distribution information on Chinook in the watersheds and estuaries/nearshore, and also information on other salmonids that may interact with the Chinook. Data collected over the long-term would provide for monitoring biological changes or trends in relation to recovery actions and to test assumptions made in recovery planning; for example, the assumption that delaying hatchery releases of yearling coho salmon and steelhead reduces potential predation on Chinook juveniles. The project requires hiring a biologist and four technicians, and providing transportation, equipment and supplies. Following are tasks to be undertaken under the project.

- Operate mainstem screw traps on the Hama Hama (continuation of existing project) and Dosewallips (new operation) to determine juvenile salmonid abundance and timing of their migratory movements (Apr. – Sep.).
- Survey the mid Hood Canal estuaries with beach seines and traps at selected tidal regimes to collect information on the distributions and life histories of all species (Apr. - Sep.).
- Survey the nearshore for juvenile Chinook and other species at selected sites within Hood Canal (Apr. – Sep.).
- Assist with ongoing spawner surveys of Chinook and other species in late summer/ fall (Aug. - Oct.). Includes determining percent natural and hatchery origin Chinook on the spawning grounds, genetic sampling, tag sampling, and fish scale sampling for aging (Aug. – Oct.).
- Conduct periodic snorkel surveys of index areas in the mid Hood Canal watersheds to determine relative species abundance (juvenile and adults) and rearing distributions.

This project was identified in the mid Hood Canal recovery chapter as a critical part of the hatchery and harvest components. The TRT recommended incorporating adaptive management in the hatchery and harvest strategies.* This long-term project provides biological monitoring in the watershed and estuaries/nearshore essential for an effective adaptive management program. The project should be implemented as soon as possible and would be a high priority for action over the next three years.

* Puget Sound TRT. 2005. Puget Sound Technical Recovery Team (TRT) Review Comments on May 2005 Salmon Recovery Plans. Manuscript Report. November 2005.

Project Narratives:

- USFS Dosewallips wood-riparian restoration Phase 1
 - The goal of this project will be to restore properly functioning conditions (PFC) to publicly-owned federal aquatic and riparian lands within the chinook range in the Dosewallips River. Wood loading in both engineered and un-engineered designs, conifer underplantings, and exotic species control will ensure proper development of late-stage riparian forests for long-term function while wood placement will provide short-term function.
- Lower Dosewallips Powerlines, Lazy C, Southshore riparian-floodplain protection
 - The goal of this project will be to protect through voluntary means both high quality habitats and developed areas within the critical habitat corridor. Fee-simple purchase, conservation easements, and voluntary landowner agreements will be sought in coordination with existing critical areas protections. This project builds on a very successful effort over the past several years.
- Lower Dosewallips Powerlines wood-riparian restoration
 - The goal of this project will be to restore properly functioning conditions to recently purchased critical habitat in the Lower Dosewallips River. Wood loading in both engineered and un-engineered designs, conifer underplantings, and exotic species control will ensure proper development of late-stage riparian forests for long-term function while wood placement will provide short-term function.
- Lower Dosewallips below SR101 floodplain and estuary restoration
 - The goals of this project will be to restore PFC to floodplain, estuarine, riparian and in-channel habitats below SR101 by removing levees within the channel migration and intertidal zones, installing engineered log jams, replacing undersized culverts in Sylopash Slough, and replanting bare riparian areas. This project will build on a successful partnership and implementation of restoration actions with State Parks.
- USFS road decommissioning in Dosewallips
 - The goal of this project will be to decommission or convert to trails 10.6 km of USFS roads to address limiting factors of sediment loading and altered hydrology. USFS Access and Travel Management plans have already designated these roads for decommissioning and we will build on a successful public/private partnership to implement these actions.
- Lower and Middle Duckabush riparian-floodplain protection Phase 1
 - The goal of this project will be to protect through voluntary means both high quality habitats and developed areas within the critical habitat corridor. Fee-simple purchase, conservation easements, and voluntary landowner agreements will be sought in coordination with existing critical areas protections.
- Lower Duckabush riparian-floodplain-wood restoration Phase 1

- The goal of this project will be to restore heavily degraded floodplain, estuarine, riparian, and in-channel habitats by removing barriers to channel migration, restoring bank and riparian conditions, and engineering wood jams to function within a developed reach of river. This project will be initiated after planning and protection efforts have outlined a successful path forward.
- USFS road decommissioning in Duckabush
 - The goal of this project will be to decommission or convert to trails 14.2 km of USFS roads to address limiting factors of sediment loading and altered hydrology. USFS Access and Travel Management plans have already designated these roads for decommissioning and we will build on a successful public/private partnership to implement these actions.
- Middle Duckabush wood-riparian restoration Phase 1
 - The goal of this project will be to restore properly functioning conditions (PFC) to both privately and publicly-owned federal aquatic and riparian lands within the chinook range in the Dosewallips River. Wood loading in both engineered and un-engineered designs, conifer underplantings, and exotic species control will ensure proper development of late-stage riparian forests for long-term function while wood placement will provide short-term function.
- SR101 Causeway replacement feasibility Duckabush
 - The goal of this project will be to assess costs and benefits of various alternatives to replacing the raised earthen causeways under SR101, to work with responsible agencies and local citizens, and to establish a preferred alternative for construction. Local salmon recovery partners have been working with the Corps of Engineers on a scope of work for hydraulic and biological modeling of alternatives, and assume that financial support would move this effort forward.
- Robinson Road levee removal Duckabush
 - The goal of this project will be to restore tidal inundation to a small area of previously leveed salt marsh habitat. This is only one of several identified projects in this estuarine complex, but probably the only site that can proceed with restoration until the larger restoration plan is determined through a feasibility study, as described above.
- Pierce Creek culvert at Shorewood Road
 - The goal of this project will be to restore tidal and freshwater connectivity to a tidal channel and small creek complex within the larger estuary. These types of habitats consistently show utilization by chinook juveniles and are limited in size and number. Undersized culverts and associated road fill will be removed and replaced with a bridge structure, in combination with upstream enhancement through habitat protection, channel complexity, and riparian enhancement.
- Upper Hama Hama riparian restoration
 - The goal of this set of projects will be to restore PFC to both public and private riparian areas through reforestation and exotic species control, including in and above the anadromous zone of the Hama Hama River

where possible. This will also include actions by the USFS to conduct silviculture treatments in certain areas of the watershed to increase hydrologic maturity.

- USFS road decommissioning in Hama Hama
 - The goal of this project will be to decommission or convert to trails 43.7 km of USFS roads to address limiting factors of sediment loading and altered hydrology. USFS Access and Travel Management plans have already designated these roads for decommissioning and we will build on a successful public/private partnership to implement these actions.
- Nearshore assessment
 - The goal of this project will be to incorporate existing databases and governmental nearshore assessments in all three counties to develop a prioritized set of voluntary habitat actions for implementation of salmon recovery as well as incorporation as best available science into federal, state, and county regulatory programs.
- Adaptive management and monitoring
 - Direct and Cumulative Effectiveness monitoring for projects and programs can be implemented concurrently through a rigorous watershed monitoring program that meets multiple objectives, including status and trends of habitats, effectiveness of activities, and watershed assessment for future project design. Our proposal is to work within the WA Department of Ecology status and trends framework proposal to monitor conditions at the WRIA and SRR scales. A lead biologist will manage 2 half-time crews; coordinate with other local interests already engaged in monitoring, including RFEGs, conservation districts, counties, and cities; and be a communication bridge between local activities, regional data roll-up, and state database management and analyses.

Three-Year Watershed Implementation Priorities for the Mid-Hood Canal Chinook Independent Population

Action # refers to Mid-Hood Canal Chinook Recovery Chapter Appendix C1,2,3
 Costs from Chinook Recovery Plan estimates, with some additional estimates
 Year 1 costs are preliminary estimates to be developed further by project sponsors
 Likely project sponsors are not confirmed
 Prioritization to be determined through Lead Entity process

to be determined through lead entity process									2007		2008		2009	
Action #	Action	Likely sponsor	Project/pr ogram?	Project/ program status	Total cost of first three years	Proposed SRFB (or grant) share	Local share or other funding	Source of other funds	Year 1 Scope	Year 1 Cost	Year 2 Scope	Year 2 Cost	Year 3 Scope	Year 3 Cost
Capital projects and programs														
33,34,3,6,37,38,40	USFS Dosewallips wood-riparian restoration phase 1	USFS and Tribes; Noxious Weed Board	Project	developing	\$1,690,000	\$1,436,500	\$253,500		Feasibility/Design; Exotic Control	\$250,000	Permitting and Construction; Exotic Control and Planting		Construction, Planting, Monitoring	
20,25,32	Powerlines, Lazy C, Southshore riparian-floodplain protection Lower Dosewallips	Jefferson Land Trust, State Parks, Jefferson County, CLC	Project	on-going	\$2,000,000	\$1,700,000	\$300,000		Coordinate with floodplain program, Landowner Outreach, transactions	\$300,000	Implementation Plan, Landowner Outreach, Transactions		Transactions	
21,23,24	Powerlines Lower Dosewallips wood-riparian restoration	WA Trout and Tribes; County and Land Trust	Project	on-going	\$735,000	\$624,750	\$110,250		Feasibility/Design, Landowner Outreach, Planting	\$200,000	Permitting and Construction		Planting, Monitoring	
3,5,6,7,9,11,16	Lower Dosewallips below SR101 floodplain/estuary restoration	WA Trout, Tribes, State Parks	Project	Design complete, partially constructed	\$717,500	\$609,875	\$107,625		Landowner Outreach, plantings, design, permitting and Construction	\$200,000	plantings, design, permitting and construction		Construction, Planting, Monitoring	
27,28,41	USFS road decommission Dosewallips	USFS, Tribes, HCSEG	Project	feasibility done	\$226,500	\$192,525	\$33,975		Design, Permitting	\$40,000	construction			
11,14	Lower and Middle Duckabush riparian-floodplain protection Phase 1	Jefferson County and Jefferson Land Trust	Project	conceptual	\$2,000,000	\$1,700,000	\$300,000		Coordinate with floodplain program, Landowner Outreach, transactions	\$250,000	Transactions, Landowner Outreach		Transactions	
11	Lower Duckabush riparian-floodplain restoration Phase 1	?	Project	conceptual	?	?	?			\$0	Feasibility/Design, Landowner Outreach		Continued Design, Permitting	
9,10	USFS road decommission Duckabush	USFS, Tribes, HCSEG	Project	feasibility done	\$370,500	\$314,925	\$55,575		Design, Permitting	\$40,000	construction		construction	
12,13,1	Middle Duckabush wood-riparian restoration phase 1	USFS and Tribes; Noxious Weed Board	Project	conceptual	\$3,175,000	\$2,698,750	\$476,250		Exotic Control and Planting	\$50,000	Landowner Outreach, Feasibility/Design; Exotic Control and Planting		Landowner Outreach, Design, Permitting	
2,3,5,6,7	SR101 Causeway Replacement Duckabush	Army Corps, multiple?	project	feasibility ongoing	?	?	?		Feasibility	\$100,000	Feasibility		Design	
4	Robinson Road Levee Removal Duckabush	HCSEG	project	conceptual	\$80,000	\$68,000	\$12,000		Design and permitting	\$20,000	Construction			
8	Pierce Creek culvert at Shorewood RD	?	project	conceptual	\$275,000	\$233,750	\$41,250			\$0	Design, Permitting		Construction	
12,13,14	Upper Hama Hama riparian restoration	USFS	project	conceptual	?	?	?		Exotic Control and Planting	\$50,000	design, planting, exotic and upland control		planting, exotic and upland control	
7,8	USFS road decommission Hama Hama	USFS, Tribes, HCSEG	project	feasibility done	\$1,048,500	\$891,225	\$157,275		Design, Permitting	\$100,000	Permitting and Construction		Permitting and Construction	
	Road Drainage and Stabilization	USFS	program	on-going	?				planning, permitting, construction		construction, BMPs		construction, BMPs	
		Total capital need			\$12,318,000	\$10,470,300	\$1,847,700		Total year 1 need	\$1,600,000	Total year 2 need	\$0	Total year 3 need	\$0

Non-capital needs															
	Adaptive management and monitoring	Multiple stakeholders	Program	Ongoing need	\$840,000				status and trends field crew and supervisor (3.0 FTE)	\$280,000	status and trends field crew and supervisor (3.0 FTE)	\$280,000	status and trends field crew and supervisor (3.0 FTE)	\$280,000	
	Nearshore assessment	HCCC, Kitsap, Mason, Jefferson Counties	Project	Began in 2005	\$300,000	\$255,000	\$45,000		planning, coordination	\$50,000	data collection and analysis;GIS	\$150,000	landowner outreach, final report, coord with SMPs and SRPs	\$100,000	
	Population Analysis & Modeling	WDFW/Tribes	Program	Not started	\$129,250				Staffing (0.5 FTE)	\$41,000	Staffing (0.5 FTE)	\$43,050	Staffing (0.5FTE)	\$45,200	Ongoing
	Biological Monitoring Project	WDFW/Tribes	Program	Not started	\$853,500				Staffing (1 FTE - Bio., 4FTEs - Tech.)	\$320,800	Staffing (1 FTE - Bio., 4FTEs - Tech.)	\$262,400	Staffing (1 FTE - Bio., 4FTEs - Tech.)	\$270,300	Ongoing
	Co-mgrs. Gen, Mgmt. & Operations Support	WDFW/Tribes	Program	Not started	\$504,400				Staffing (WDFW-1 FTE) (PGSK&JSK Tribes-1FTE)	\$160,000	Staffing (WDFW-1 FTE) (PGSK&JSK Tribes-1FTE)	\$168,000	FTE) (PGSK&JSK Tribes-1FTE)	\$176,400	Ongoing
	Total non-capital need				\$2,627,150	\$255,000	\$45,000		Total year 1 need	\$851,800	Total year 2 need	\$903,450	Total year 3 need	\$871,900	